



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 301 S. PARK, DRAWER 10096
HELENA, MONTANA 59626-0096**

Ref: 8MO

March 16, 2000

Mr. Ted Koch
U.S Fish & Wildlife Service
Snake River Basin Office
1387 South Vinnell Way, Room 368
Boise, Idaho 83709

Re: DEIS and Native Fish Habitat Conservation
Plan for Proposed Permit for Taking of
Federally Listed Native Fish Species on Plum
Creek Timber Company Lands

Dear Mr. Koch:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Environmental Protection Agency, has reviewed the above-referenced Draft Environmental Impact Statement (DEIS) and Native Fish Habitat Conservation Plan (NFHCP).

The EPA appreciates and supports the efforts by the U.S. Fish & Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Plum Creek Timber Company (Plum Creek) to develop a conservation plan to protect habitat and aquatic ecosystems of native salmonid fish in Montana, Idaho and Washington. The NFHCP represents the beginning of a process that we find encouraging.

The success of the NFHCP in terms of achieving biological goals, avoiding "take" of listed species, assuring species viability and sustainability, and protecting and restoring water quality and aquatic habitat, depends to a great extent upon the effectiveness of the monitoring and adaptive management program. It is important that the monitoring and adaptive management program assure that all effects, particularly cumulative effects, of Plum Creek activities over the 30 year period of the Permit are identified and properly mitigated. While the proposed adaptive management and monitoring program is a good start, we have concerns that this program lacks the necessary scope and detail to assure that effects from Plum Creek's management activities upon water quality, aquatic habitat and fisheries will be fully identified and mitigated. Further explanations and more detailed and specific information regarding Plum Creek's adaptive management and monitoring program should be provided.



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It is also important that monitoring reports and information be available for review by the public and interested agencies. Without more detailed monitoring information and public access to monitoring reports we do not believe the EIS will include adequate information to fully assess effects of the management actions.

It may be appropriate for the Services to assemble an independent science review panel consisting of agency, company, and accredited academic representatives to review the monitoring and adaptive management program, particularly relating to ecological thresholds and triggers. We believe such a panel would improve the adaptive management program and lend credibility to the program. Independent scientific oversight of the adaptive management program also may better assure that Plum Creek management actions remedy problems in a manner that truly provides protection to fish.

The EPA also has concerns about the level of protection provided by the proposed NFHCP harvest prescriptions for Tier I and Tier II watersheds, and about the disaggregation of project area watersheds into Tier I and Tier II watersheds. The level of protection proposed in the NFHCP for both Tier I and Tier II watersheds is less than that provided for by the Washington State Forest & Fish Program, and may be inconsistent with USFWS Bull Trout Interim Conservation Guidance. We are concerned that the riparian prescriptions of the NFHCP will not adequately protect riparian resources and aquatic habitat. We recommend that the Services negotiate with Plum Creek to achieve more protective riparian management prescriptions.

We also note that Plum Creek only owns approximately 10% of the approximately 17.3 million acres of land in the planning area. Success of overall efforts to protect and restore native fish species viability and sustainability will require habitat protection on other land ownerships in the planning area. The DEIS does not include a description of the overall viability and sustainability of the habitat and aquatic ecosystems for native salmonid fish within the planning area. We recommend that the FEIS provide an overview of the overall efforts to conserve and protect habitat of native salmonid fish in the planning area; the status of these efforts; and the short and long term implications for overall species and habitat viability and sustainability. It is also not clear how Plum Creek's efforts will be integrated or coordinated with the overall habitat protection efforts on other land ownerships in the planning area. A coordinated and integrated watershed conservation strategy on all land ownerships is needed. The FEIS should provide some description of efforts to coordinate or integrate Plum Creek efforts with the other habitat protection efforts in the planning area.

The DEIS indicates that the NFHCP hopes to minimize and mitigate "to the maximum extent practicable" the effects of potential Take of Covered Species (e.g., NFHCP page 1-8; Appendix A, Section 2.1.4, etc.). There appears to be much subjectivity in the determination of whether mitigation efforts are implemented "to the maximum extent practicable." The Services should clarify the standards by which this "maximum extent practicable" determination will be made. We are concerned that needed mitigation actions (i.e., actions that would avoid, minimize, and compensate for impacts to fisheries) may be rejected primarily due to business or cost considerations. We recognize the need for a reasonable return on investment, but have concerns that cost concerns may override environmental or biological concerns in such determinations.

Also, the DEIS provides little information on USFWS/NMFS inspection, monitoring and consultation regarding Incidental Take Permit and NFHCP implementation. EPA recommends that the Implementing Agreement more clearly describe roles and responsibilities of the Services, Plum Creek, and auditors for inspections and consultations, and schedules for inspection and consultation, and consequences and remedies in the event of NFHCP or Permit non-compliance. Consequences and remedies for Permit and NFHCP non-compliance should be established in the Implementing Agreement, and such remedies and consequences should be strong enough to deter violations.

We are also concerned that the USFWS and NMFS may lack adequate resources to properly oversee implementation of this 30 year Permit and NFHCP covering 1.7 million acres in three States. We are particularly concerned that the USFWS in Montana (where 88% of the Plum Creek land is located) lacks resources to effectively carry out this oversight responsibility. Other agencies presently provide resources to allow the USFWS to carry out its ESA responsibilities in Montana (e.g., US Forest Service and Montana Dept. of Transportation provide resources to the USFWS in Montana). The resources that the Services will be able to provide to inspect, monitor and oversee Permit and NFHCP implementation on the 1.7 million acres of Plum Creek land over the 30 year Permit period should be described in the FEIS. Will adequate resources be available to the Services to provide needed oversight of the Permit and NFHCP?

The concerns EPA has regarding the adequacy of the NFHCP prescriptions and commitments to address aquatic degradation (e.g., riparian prescriptions, lack of road density commitment, etc.), and concerns about the adequacy of the monitoring and adaptive management program and implementation reporting and oversight, lead us to believe it would be prudent for the Services to consider a duration of shorter than 30 years for the Incidental Take Permit. We recommend that the Services consider issuing a Permit for a period of 10 to 20 years, perhaps with an option to extend the Permit to 30 years if monitoring reports provide adequate documentation that prescriptions are successful in improving water quality and aquatic habitat.

In regard to Clean Water Act (CWA) and Endangered Species Act (ESA) consistency, the EPA believes that Habitat Conservation Plans (HCPs) prepared in response to ESA species survival and recovery needs should be consistent with present and future Total Maximum Daily Loads (TMDLs) prepared to satisfy CWA requirements. The FEIS should identify water quality limited water bodies in need of a TMDL within the planning area (i.e., 303(d) listed streams), and identify the TMDL status for these 303(d) listed water bodies. This will facilitate assessment of NFHCP-TMDL consistency, and efforts to integrate and coordinate TMDL requirements with the NFHCP. The NFHCP has many watershed restoration elements that may be incorporated into TMDLs at a later date if they prove to be effective.

We also recommend that a caveat be included in the NFHCP that watershed scale TMDLs will need to be completed at a future date by the States to cover all land ownerships in watersheds of 303(d) listed waters. A “reopener” statement may also be needed and/or adaptive management

process established to allow for NFHCP habitat protections to be reassessed when the larger watershed scale TMDLs are completed at a later date. We urge that the lead agency and Plum Creek coordinate the NFHCP closely with EPA and the State water quality agencies in meeting Clean Water Act mandates.

The EPA's more detailed questions, concerns, and/or comments regarding the analysis, documentation, or potential environmental impacts of the Plum Creek Timber Company Native Fish Habitat Conservation Plan and Incidental Take Permit DEIS are included in the enclosure with this letter. Based on the procedures EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action and alternatives in an EIS, the Plum Creek Timber Company Native Fish Habitat Conservation Plan and Incidental Take Permit DEIS has been rated as Category EC-2 (Environmental Concerns - Insufficient Information). A copy of EPA's rating criteria is attached.

The EPA has environmental concerns regarding the adequacy of the proposed monitoring and adaptive management program to fully assess all aquatic effects of Plum Creek land management activities, particularly cumulative effects, and about the adequacy of proposed riparian management prescriptions. We recommend a shorter duration 10 to 20 year Permit. We believe additional information should be provided regarding: integration of the NFHCP with overall conservation efforts in the entire project area; USFWS and NMFS resources for oversight and evaluation of the Permit & NFHCP; and NFHCP-TMDL consistency.

The EPA appreciates the effort that went into the preparation of this DEIS, and we thank you for the opportunity for review and comment. If we may provide further explanation of our concerns please contact Mr. Steve Potts of my staff in Helena at (406) 441-1140 ext. 232.

Sincerely,

Original Signed by
John F. Wardell

John F. Wardell
Director
Montana Office

Enclosure

cc: Cynthia Cody/Yolanda Martinez, EPA, 8EPR-EP, Denver
Elaine Somers, EPA, Region 10, Seattle
Don Martin, EPA, Idaho Office, Boise
Brian Sugden, Plum Creek Timber Co., Columbia Falls
Tim Bodurtha, USFWS, Kalispell

EPA Comments on Draft Environmental Impact Statement and Native Fish Habitat Conservation Plan for Proposed Permit for Taking of Federally Protected Native Fish Species on Plum Creek Timber Company Lands

Brief Project Description:

The U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) have prepared a Draft Environmental Impact Statement (DEIS) to analyze alternatives and impacts for issuance of a 30 year Permit under the Endangered Species Act (ESA) to authorize the Incidental Take of Federally listed fish species that would occur with implementation of a Plum Creek Timber Company (Plum Creek) Native Fish Habitat Conservation Plan (NFHCP). The NFHCP covers approximately 1.7 million acres of Plum Creek lands in the States of Washington, Idaho and Montana (88% or 1,462,000 acres of lands are in Montana; 8% or 134,000 acres in Idaho; and 4% or 85,000 acres in Washington).

Plum Creek lands covered in the NFHCP comprise a significant percentage of the Flathead, Thompson, Kootenai, Swan, and Blackfoot River drainages in Montana. The NFHCP project area includes Plum Creek ownership the Lochsa, Little North Fork Clearwater, and St. Joe River Basins in Idaho, and the Tieton and Ahtanum and Lewis River Basins in Washington. Plum Creek's land ownership is partially intermingled in a checkerboard pattern with approximately 15.6 million acres of lands managed by the Forest Service, State, Tribal or other private owners. Thus the planing area for the NFHCP encompasses approximately 17.3 million acres, of which approximately 10% is owned by Plum Creek and approximately 60% owned by the Federal government.

The 17 salmonid fish species covered in the NFHCP include 8 listed species (Columbia River Basin Bull Trout, Snake River Steelhead, Mid-Columbia River Steelhead, Lower Columbia River Steelhead, Snake River Spring/Summer Chinook Salmon, Snake River Fall Chinook Salmon, Lower Columbia River Chinook Salmon, Columbia River Chum Salmon); and 9 non-listed species (redband trout, coastal rainbow trout, westslope cutthroat trout, mountain whitefish, pygmy whitefish, coastal cutthroat trout, Upper Columbia chinook salmon, Mid-Columbia chinook salmon, and Lower Columbia River coho salmon). Three of these 17 fish species are present in Montana (redband trout, bull trout, westslope cutthroat trout); six of the fish species are present in Idaho; ten are present in Washington.

The purpose of the proposed action is to authorize incidental take of the covered Permit species by Plum Creek and provide the Company with reasonable assurances consistent with the "No

Surprises” Final Rule which was effective March 25, 1998 (FR 1998b). Thus, there is a dual purpose for this project of assurance of conservation of native salmonids and assurance of long term regulatory certainty for Plum Creek.

Four alternatives for management of Plum Creek lands are analyzed in the DEIS including, No Action, Plum Creek’s NFHCP Alternative, an Internal Bull Trout Conservation Plan Alternative, and a Simplified Prescriptions Alternative. The No Action Alternative would provide compliance with Federal and State laws and forest practice regulations but no Incidental Take Permit would be issued and the NFHCP would not be implemented.

The NFHCP Alternative involves implementation of the NFHCP prepared by Plum Creek to conserve habitat for bull trout and other native salmonids (including unlisted species) and allow recovery of listed species by seeking the Incidental Take Permit. Plum Creek prepared the NFHCP to ensure greater economic viability and increase regulatory certainty and flexibility through productive long-term forest management. The NFHCP establishes four basic biological goals (with fifteen specific habitat objectives and 53 individual conservation commitments) and four business goals (with eleven specific business objectives), and is intended to integrate and balance biological and business goals. The Plum Creek activities covered in the NFHCP include road management, commercial forestry activities, fire suppression, grazing, conservation activities, recreation, and miscellaneous activities such as mining gravel or landscape stones.

The Internal Bull Trout Conservation Plan Alternative consists of a package of defensive science based land management practices and conservation measures that could be developed and implemented by Plum Creek. This alternative could potentially be used to authorize incidental take for a single species or listed species only habitat conservation plan, as contrasted to the NFHCP multi-species approach that also includes unlisted species. This is the likely fall back alternative if the NFHCP alternative is not selected.

The Simplified Prescriptions Alternative involves a general approach to road, riparian buffer, and grazing restrictions, with either no or minimal commitments to other practices that conserve fish, that would be adequate for Permit issuance. This general approach is contrasted to the NFHCP focused site-specific conservation approach.

Comments:

Overall Species and Habitat Situation:

1. We appreciate and support the efforts of Plum Creek and the Services to develop a conservation plan to protect habitat and aquatic ecosystems of native salmonid fish in Montana, Idaho and Washington. The NFHCP represents the beginning of a process that we find encouraging. Plum Creek, however, only owns approximately 10% of the approximately 17

million acres of land in the planning area. Success of overall efforts to protect and restore native fish species viability and sustainability will require habitat protection on other land ownerships in the planning area.

The DEIS does not include a description of the overall viability and sustainability of the habitat and aquatic ecosystems for native salmonid fish within the planning area. We understand that the Services are preparing recovery action plans for bull trout and other listed species. How do bull trout (and other listed species) populations and habitats on Plum Creek lands fit into the bigger picture of recovery? **We recommend that the FEIS provide an overview of the overall efforts to conserve and protect habitat of native salmonid fish in the planning area; the status of these efforts; and the short and long term implications for overall species and habitat viability and sustainability.**

2. It is also not clear how Plum Creek's efforts will be integrated or coordinated with the overall habitat protection efforts on other land ownerships in the planning area. **A coordinated and integrated watershed conservation strategy on all land ownerships is needed.** We believe the FEIS should provide some description of efforts to coordinate or integrate Plum Creek efforts with the other habitat protection efforts in the planning area.
3. It would also be helpful if the FEIS more clearly disclosed the extent to which past Plum Creek timber cutting, road construction, and other management activities have contributed to degradation of water quality and aquatic habitat and fisheries in the planning area as compared to activities on other land ownerships in the planning area (i.e., effects to stream structure and channel stability, streambed substrate including seasonal and spawning habitats, woody debris, streambank vegetation, and riparian habitats). Comparison of aquatic habitat degradation resulting from Plum Creek's activities vs. activities on other land ownerships would provide perspective on the contribution of the Plum Creek NFHCP toward achieving overall species viability and sustainability within the planning area (i.e., Is the aquatic habitat degradation on Plum Creek's 10% of land in the planning area more or less than that on other land ownerships? Is it known how many acres of Plum Creek land has been logged and miles of roads constructed vs. adjacent Federal ownership? To what extent will the Plum Creek NFHCP contribute to overall restoration and recovery of fisheries?).

Particular attention should be directed at evaluating and disclosing the **cumulative effects** of increased water yield, and increased levels of erosion and sedimentation on Plum Creek land and within the overall planning area. A good cumulative impacts assessment for Plum Creek activities and activities on adjacent lands within the planning area is needed to allow evaluation of the overall context of the NFHCP within the planning area. This will also enable more informed judgements to be made regarding the overall future outcome relative to species viability and sustainability.

Alternatives:

4. It is stated (page ES-10) that only the NFHCP Alternative would serve to reduce impacts and multiple threats to Permit species and their habitat, while allowing Plum Creek to achieve their business goals. Does this mean that only one of the four alternatives evaluated in the DEIS will meet the purpose and need (i.e., both reduce threats to Permit species and allow Plum Creek to achieve their business goals)? If that is the case it brings into question whether an adequate range of reasonable alternatives have been considered (see the Council on Environmental Quality's regulations for implementing NEPA, 40 CFR 1502.14). Does the FWS and NMFS believe that an adequate range of reasonable alternatives has been considered if only one alternative can meet the project purpose and need?
5. We are also concerned that even the more protective action alternatives (NFHCP Alternative and Simplified Prescriptions Alternative) do not provide full restoration of all aquatic functions and conditions adequately protective of fish habitat. **We believe that it would be appropriate to evaluate an alternative that is fully protective of aquatic functions and conditions.** Such a Pro-Fish Conservation Alternative would combine the best options for Native Fish Habitat Conservation from the three action alternatives. This alternative may not be "practicable" from Plum Creek's business standpoint, but its inclusion, discussion and evaluation would allow a more enlightened basis for comparison of aquatic protection needs vs. business goals, and for making determinations of mitigation "to the maximum extent practicable," which is another concern of EPA (as discussed in the following comment number 6).

NFHCP:

6. Much language in the DEIS indicates that the NFHCP hopes to minimize and mitigate "to the maximum extent practicable" the effects of potential Take of Covered Species (e.g., NFHCP page 1-8; Appendix A, Section 2.1.4, etc.,). There appears to be much subjectivity in the determination of whether mitigation efforts are implemented "to the maximum extent practicable." The Services should better clarify the standards by which this "maximum extent practicable" determination will be made. We are concerned that needed mitigation actions (i.e., actions that would avoid, minimize, and compensate for impacts to fisheries) may be rejected primarily due to business or cost considerations. We recognize the need for a reasonable return on investment, but have concerns that cost concerns may override environmental or biological concerns in such determinations.

This concern seems to be substantiated by the statement on page 8-15 of the NFHCP (in the box on AM2-Adaptive Management Commitment 2), regarding commitment of resources to maintain biological goals, which states, "the Services and Plum Creek will utilize the NFHCP business goals to guide the development of a response." This statement seems to imply that

business goals will guide management response in the adaptive management program. It is not clear how biological goals or considerations will be balanced with business considerations when determining management responses. We believe a balance of business and biological considerations should guide management responses. **We are concerned that if business considerations override biological considerations, a reduction in the success of efforts to restore species viability and sustainability is likely to result.**

How will the Services assure proper balance between biologic and economic considerations with determinations that mitigation has occurred to the “maximum extent practicable”? How will biological goals be considered relative to business goals in determining management response to monitoring results? How are determinations made that more protective management prescriptions are too expensive or “not practicable”?

7. The NFHCP fails to include the endangered White Sturgeon in the Kootenai River system. This fish has habitat requirements that are different from the Bull trout and consequently could require other Best Management Practices (BMPs) or modified monitoring to detect White Sturgeon effects.
8. The NFHCP also does not appear to address protection of bald eagle nesting sites, listed plants (e.g., water howellia) or measures to identify and maintain grizzly migration paths. How will the USFWS/NMFS evaluate whether the NFHCP may impact or harm other listed species not included in the plan. Of particular concern is the position taken that Plum Creek can destroy listed plants anyway, without the NFHCP, so the USFWS doesn’t see a need to add provisions to protect them. This position is inconsistent with Section 7(a)(2) of the Endangered Species Act in that the USFWS is authorizing, through approval of the HCP, an activity that may affect a listed species.
9. We do not see much in the NFHCP in regard to use of chemicals (pesticides, herbicides, fertilizers, fire retardants, fuels, lubricants, etc.). Chemical usage can affect water quality and fisheries. Plum Creek’s use of chemicals should be addressed in the NFHCP. In addition the monitoring and adaptive management program should allow for detection of chemicals used by Plum Creek in carrying out their management actions (i.e., water quality and biological impacts from chemical usage).

We also note that the EIS uses the Bull trout as the surrogate for all salmonids. This may be appropriate where sediment and water temperature are the primary concerns, since bull trout are sensitive to sediment and temperature. The Bull trout, however, is not an appropriate surrogate for toxicants since other salmonids, especially Rainbow trout, are more sensitive to toxicants.

10. In regard to Tier I and II watersheds (DEIS page 2-20; NFHCP, page 1-10), Tier I is defined

as spawning and rearing habitat for bull trout; Tier II is migratory habitat and all other habitat types. Tier I watersheds receive greater protection than Tier II watersheds, but only 19% of the total project area is within Tier I. We have concerns regarding the simple disaggregation of all watersheds into Tier I and Tier II watersheds, and the levels of protection provided to all salmonid species.

First of all Tier I appears to include only known occupied bull trout habitat. Bull trout are difficult to sample, and there is a lot of uncertainty regarding presence/absence. Also, bull trout may become extinct in some local habitats and recolonize others. Therefore, management based exclusively on patterns of occurrence can produce a misleading view of habitats that may be key to bull trout populations. The USFWS (to our understanding) is currently managing known occupied *and* potential habitat under identical guidelines.

We suggest that potentially occupied habitat also be included in Tier I watersheds.

One of the major reasons for listing bull trout was a decline in distribution. Therefore, an expansion of distribution is needed, and habitats outside of the current distribution of bull trout should be restored.

Determination of potential distribution should involve detailed review of historical records of occurrence and modeling of habitat potential (similar to TMDL process).

We are also concerned that the listing of Tier I watersheds is based only on bull trout spawning and rearing habitat, yet the NFHCP is intended to provide protection for all habitats for 17 salmonid species, including 7 other listed species in addition to bull trout. It is important to protect the spawning and rearing habitat of all 17 species, and to protect the migration, holding, and overwintering habitat (not just the spawning and rearing habitat) of all 17 species. Separation into Tier I and II watersheds based only on bull trout spawning and rearing habitat may over simplify what is needed to protect important habitats for all species. It will likely be

necessary to expand protective coverage of Tier I watersheds beyond 19% of the planning area in order to protect important habitat for all 17 species, particularly the important habitat of all 8 listed species (not just bull trout), and the westslope cutthroat trout which has been petitioned for listing.

As described in comment number 14 below, we also have concerns about the level of protection provided by the proposed NFHCP harvest prescriptions for Tier I and Tier II watersheds. The level of riparian and aquatic resource protection provided by the Tier II watershed prescriptions are significantly less than protections provided for Tier I watersheds. Thus, by the NFHCP proposal 81% of the project area will get this lesser level of Tier II protection. The level of protection proposed in the NFHCP for both Tier I and Tier II watersheds is less than that provided for by the Washington State Forest & Fish Program. We are concerned that the riparian prescriptions of the NFHCP will not adequately protect riparian resources and aquatic habitat.

NFHCP Roads:

11. We are pleased that the NFHCP includes BMPs that exceed the protections provided in some State voluntary BMPs (e.g., culvert replacement sizing for 50 year flood, increased road cross drainage, etc.), although descriptions of BMPs sometimes use vague or unclear language such as “cross draining where possible”, “to the extent practicable”, “minimize sediment delivery”. Wherever possible explicit BMP language should be used, and quantitative measurable targets and standards should be established to evaluate the efficacy of BMPs, and provide a basis for adjusting management.

Improvements to forest road systems and reduction in road density are especially critical to protecting aquatic health and wildlife resources for the project area. As you know road construction greatly increases the possibility of erosion and sediment transport, and roads can direct runoff to streams impacting channel hydrology and stability. Areas of concern regarding roads include the number of road stream crossings; road drainage; culvert sizing and potential for washout; culvert allowance of fish migration and effects on stream structure; seasonal and spawning habitats; large organic material supplies; and riparian habitats. Undersized culverts should be replaced and culverts which are not aligned with stream channels or which present fish passage problems and/or serve as barriers to fish migration should be adjusted.

Additional information in regard to road impacts upon streams would be of interest. How many road stream crossings exist on Plum Creek land, and what percentage of roads within 300 feet of streams that are present on Plum Creek land? Reduction in the number of stream crossings and relocation of roads further away from streams as well as reduction in road density would reduce impacts of roads upon aquatic habitat.

In regard to BMPs for road construction, the section on stream crossings talks about sizing requirements for culverts. We note that culverts and fill material, while they may be the easiest and cheapest way to build the road crossing, can be damaging to aquatic habitat. We encourage Plum Creek and the Services to consider use bridges that provide a clear span of the channel, with no associated fill in waters of the U.S., instead of culverts on Tier 1 streams. This would be one way to demonstrate a clear resolve to protect and recover the species. We also note that inner gorges are not the only unstable geological features that should be avoided when building new roads (page 2-8). Other unstable areas such as highly erodible soils, steep slopes, and bedrock depressions should also be avoided.

We also support inspections and evaluations to identify existing road conditions that cause or contribute to nonpoint source pollution and stream impairment. We recommend that the FEIS describe necessary inspection and non-traffic-generated maintenance activities for closed, but unobliterated, roads, and describe obliteration and rehabilitation methods and their effectiveness for roads whose road prisms will be physically removed. **We recommend that the NFHCP and FEIS describe the frequency of maintenance activities for roads and whether adequate funding is anticipated for road maintenance.** Road blading should focus on reducing road surface erosion and sediment delivery. Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided.

12. We note from review of Table 4.6-7 (page 4-129) that road densities on Plum Creek lands are high relative to typical road densities on Forest Service lands (i.e., average road density of 4.3 miles per square mile reported on Plum Creek land). We do not agree with the discussion in the NFHCP (Section 2) that attempts to justify reduction in this high road density on Plum Creek lands. The Upper Columbia River Basin Scientific Assessment correlated road densities to the aquatic integrity of watersheds. This Assessment stratified road densities indicating that densities over 4.7 mi./sq. mi. are extremely high; 1.7 to 4.7 mi./sq. mi. are high; 0.7 to 1.7 mi./sq. mi. are moderate; and 0.1 to 0.7 mi./sq. mi. are considered low road density). Watersheds with higher road densities were considered to have reduced aquatic integrity, and roads were identified as being a major long-term contributor of sediment in a watershed.

The road density on Plum Creek land of 4.3 mi./sq. mi. would fall into the high category by this stratification. It is also stated in the DEIS (NFHCP page 2-1) that approximately 20,000 miles of roads occur on Plum Creek land, and that 1,300 miles of new road would be constructed in the first 10 Years [although for each new mile of road built at least 2 miles of existing road will be upgraded or abandoned, (page 3-17)]. **It would appear that a reduction in road density on Plum Creek land will be required if a sincere effort to protect aquatic habitat and fisheries is to be achieved.**

While the road management commitments in the NFHCP look like they will result in watershed

improvements, we believe that Plum Creek and the Services should also target reductions in road density for sensitive watersheds and/or high road density watersheds as a means to address sediment delivery and channel habitat objectives. We believe high road density contributes to aquatic degradation, and we believe a road density reduction commitment is needed if aquatic habitat is to be improved to the extent necessary for protection of habitat for bull trout and other salmonids. Road density would then be another parameter to monitor and assess over time.

13. On page 2-1 of the NFHCP it is stated that an estimated 1,300 miles of new road would be constructed during the 30 year period of the Permit for commercial forestry activities. Yet in Table 3.3-1 (page 3-17) of the DEIS it is stated that 1,300 miles of new road would be constructed in the first 10 years. This apparent inconsistency in time period during which the 1,300 miles of new road would be constructed should be corrected.

NFHCP Riparian Management:

14. We are concerned about potential effects of Plum Creek forest practices within riparian areas which may result in adverse impacts to water quality and aquatic habitat. It is stated (page 5-5) that a reduction of only 1 °F is expected on average in response to NFHCP riparian harvest prescriptions. This seems like a relatively minor improvement in addressing existing elevated temperature regimes. It is our understanding that the USFWS Bull Trout Interim Conservation Guidance recommends no increase in temperature in bull trout waters. This Guidance also appears to provide for wider riparian buffer strips. Proposed Plum Creek NFCHP riparian harvest prescriptions do not appear to be consistent with this Guidance.

EPA's Region 10 reviewers indicate that proposed NFHCP riparian prescriptions are less protective than the those proposed in the Washington Forest and Fish report. The NFHCP states that within Tier I watersheds, no timber harvest will occur in the channel migration zones (CMZ's) and limited harvest (88 trees per acre [tpa]) will be allowed upslope for 50 feet outside the CMZ (NFHCP page 3-12). Within Tier II watersheds, limited harvest (88 tpa) will be allowed within the CMZ and for 50 feet outside the CMZ (NFHCP page 3-16). This allows up to 50% of the timber to be harvested within the riparian area. The Washington State Forest and Fish (F&F) prescriptions are more protective than this. Although we also have concerns about the degree of aquatic protection provided by the State Forest Practice rules.

The NFHCP commitment Rp1 (NFHCP, page3-7) indicates that the State Forest Practice Rules will be used as the NFHCP basis for riparian management. While this may satisfy the State laws, we want to indicate concern regarding the level of aquatic protection provided by the State rules. As an example, the Montana SMZ rules do not provide adequate protection for headwater streams. For non-fish bearing, low order streams there is little protection. They allow removal of 50% of trees in riparian areas, with loggers basically being on their honor to

leave representative sizes and composition, however, this is not enforced and it is not enforceable. The largest and most desirable trees are generally taken irrespective of aquatic ecosystem needs. The SMZ rules requires very little large woody debris (LWD) to be provided for. This is one of the most glaring problems. By removing 50% of the trees in the SMZ, they are allowing 50% of the future instream LWD supply to be removed. In addition, the 50% cutting allowed in SMZs can be applied repeatedly. There is no waiting period for the longevity of the residual buffer. Each time a logger returns to cut again, he can take 50% of the SMZ trees. There is no requirement that they be left permanently. For salvage logging, there are even lower leave tree requirements in the buffer. Therefore, if you leave a buffer and some, most or all of the remaining trees are blown down, it is permissible to salvage the windfall with no LWD leave requirements. It is our understanding that you could, consequently, end up with no buffer at all and still be in compliance with the rules. SMZ is a very complicated law. The width of the buffers are variable.

Wetlands, bogs, etc. are often not protected, since they must fall within or touch the boundary of the SMZ to be given SMZ treatment of 50% cutting. If the delineation boundary is near but does not touch the SMZ boundary, no protection is given, and it can be clearcut. This can affect ground water connectivity.

The SMZ Law doesn't apply to land conversion. Where land is being converted to other uses, no buffer is required. Apparently, there is a qualifier to the effect that no buffer is required as long as you don't sell the wood. So a logger can do a commercial harvest, leave the buffer, convert the land, and then cut the buffer.

We note that the riparian prescriptions with the Simplified Prescriptions Alternative appear more protective of riparian and aquatic resources than the NFHCP. It is stated that the Simplified Prescriptions Alternative would provide a temperature reduction of 2 °F, improved bank stability, more large woody debris loading, and overall improved complex aquatic habitat, and represent the maximum opportunity to achieve fully functioning habitat (pages 4-207, 5-5).

We recommend that the Services negotiate with Plum Creek to achieve more protective riparian management prescriptions that provide for retaining adequate canopy cover and streamside vegetation to provide for more meaningful levels of stream cooling and clean and complex habitat.

15. One of the examples shown for the NFHCP for Shroeder Creek in Figure ES-1 (page ES-11) indicates that leases will not be renewed until assessment indicates that riparian areas are functioning properly. The riparian functional assessment procedures to be used to determine whether riparian areas are functioning properly should be more fully described in the monitoring and adaptive management section. We note that monitoring will be critical to the evaluation of the protection provided by riparian prescriptions. As noted in our comments on monitoring and adaptive management below (comments 30 and 31) we believe the monitoring and

adaptive management program should be clarified and/or improved to assure full identification of potential impacts of management activities in the riparian zone to aquatic ecosystems (e.g., effects to percent fines in spawning gravel; substrate cores; stream temperature; woody debris; pool habitat; channel stability; aquatic biota, etc.,).

NFHCP Range Management/Grazing:

16. Since it is stated that 98% of Plum Creek's grazing lands are in Montana, we are pleased that Plum Creek's grazing prescriptions are stated to be consistent with the Prescribed Grazing BMP system developed by the Montana Grazing Practices Work Group (White Paper on Livestock Grazing on Plum Creek Land in the NFHCP Area, page 7). We want to draw Plum Creek's and the Services attention to the Montana grazing monitoring program entitled, "Monitoring for Success." This program, assembled cooperatively by the Montana Dept. of Natural Resources & Conservation-Rangeland Resource Program, Montana Riparian Wetlands Education Committee, and Montana Grazing Lands Conservation Initiative, provides guidance for upland and stream channel and riparian monitoring for evaluation of aquatic effects of grazing. We believe Plum Creek's proposed grazing monitoring system could be improved with inclusion of components from the "Monitoring for Success" grazing monitoring program. We also draw your attention to the document, "Effective Cattle Management in Riparian Zones: A Field Survey and Literature Review" Montana BLM Riparian Technical Bulletin No. 3, November 1997 for additional guidance on limiting grazing impacts water quality and aquatic habitat.
17. The current approach is to have grazing permittees "self monitor" their allotments. This approach has the potential for a conflict of interest, and relies to a large extent on relatively subjective and potentially unrepeatable field measurements. Periodic validation would be helpful to provide some measure of quality control and assurance. Detailed quantitative measurements of habitat conditions made by an independent party could be compared to assessments using the established protocol. If the two differ substantially, revision of the protocol will be needed. This would be the "adaptive" approach to monitoring (an important part of adaptive management).
18. Use of grazing exclosures in strategic locations is a good idea. However, locating exclosures only in streams <6% gradient ignores upstream influences. While fish may be found only in larger, lower gradient streams, it is obvious that impacts from grazing influences can originate far upstream. A more experimental approach to use of grazing exclosures would be useful to learn more about how and why exclosures may or may not work. This keeps with the philosophy of experimental management advocated in other parts of the plan.

NFHCP Land Use Planning:

19. The EPA appreciates the development of land use planning commitments in Plum Creek's NFHCP. We remain concerned, however, that high value Plum Creek lands, particularly lands adjacent to water bodies are being sold to land developers. Transfer and development of lands adjacent to water bodies will continue to adversely impact fisheries habitat. We encourage use of conservation easements and similar mechanisms to protect aquatic and other habitat when lands are transferred..

NFHCP Legacy and Restoration:

20. The EPA appreciates the development of legacy and restoration commitments in Plum Creek's NFHCP (e.g., assess riparian conditions, vegetation and habitat restoration, manage impacts of irrigation diversions, brook trout suppression, cooperation in watershed groups).
21. In regard to the Engineered Fish Habitat Restoration commitments on page ES-25, we believe it is important to establish an explicit set of criteria to guide the decision of whether or not to employ in-stream restoration techniques for engineering fish habitat restoration. It is important to focus on the larger watershed, its processes, and how human alterations have affected those processes rather than just the in-channel situation. This allows the cause of a problem to be treated rather than just the symptom. If the decision is made to install in-stream structures, the project proponent should commit to evaluating the ability of the in-stream structures to achieve their desired effect and to report the results to the public.

In regard to in-stream fish habitat structures, we have reproduced below some excerpts from "An Ecosystem Approach to Salmonid Conservation." by B.C. Spence, G.A. Lomnický, R.M. Hughes, R.P. Novitzki, December 1996.

"During the past two decades, increasing effort and resources have been committed to in-stream artificial structures intended to improve fish habitat....Frissell and Nawa (1992) surveyed artificial structures in streams of western Oregon and Washington and concluded that "commonly prescribed structural modifications often are inappropriate and counterproductive." They reported frequent damage to artificial structures, particularly those located in low-gradient reaches and in streams with recent watershed disturbance. When evaluated for 5-10 year damage rates, overall median failure rate was found to be 14% and median damage rate (impairment plus failure) was 60%. They concluded that streams with high or elevated sediment loads, high peak flows, or highly erodible bank materials are not good candidates for structural modifications."

"Beschta et al. (1991) surveyed 16 stream-restoration projects in eastern Oregon and found that instream structures frequently had negative effects on aquatic habitats (e.g., altered natural biotic and fluvial processes), were inappropriate for the ecological setting (e.g., boulders or large wood placed in meadow systems that historically never had such structures), or did not

address the full suite of riparian functions that contribute to habitat quality. They concluded that in most instances in-stream structures are unwarranted and should be eliminated as a restoration method; re-establishment of riparian vegetation through corridor fencing or rest from grazing was determined to be far more effective in restoring habitats.”

“Restoration of fourth order and larger alluvial valley streams, areas identified as having the greatest potential for fish production in the PNW, will require natural watershed and riparian processes to be re-established over the long term. Reeves et al. (1991) described numerous structure and habitat manipulations (gravel cleaning, gabions, weirs, log sills, cedar baffles, fishways, boulders, log structures), and provided an evaluation of their use and applicability for variable life history requirements and differing watershed settings. They cautioned that much work has been done with very little pre- and post-evaluation of the results, and that successful future projects will depend upon careful evaluation of existing projects. Reeves et al. (1991) concluded that 1) habitat rehabilitation should not be viewed as a substitute for habitat protection, 2) prevention of initial habitat degradation is more economical of total resources than repairing that degradation, and 3) some damage to streams is simply irreversible.”

NFHCP Administration and Implementation:

22. The audit process (NFHCP page 7-3) is a good approach to evaluate NFHCP implementation, however, it will be important for audits to be viewed as independent and objective evaluations of compliance with NFHCP commitments. **We believe the Services should have a role in selecting the auditors, and should have an active oversight role in the audit process and reporting.** The Administration and Implementation section of the NFHCP should be expanded to better define and describe the specific protocols for the audit process and the process for selecting the auditors. Only with active oversight of the audit process and follow through by both Plum Creek and the Services will successful conservation of native salmonids occur.
23. We note in our comments on the monitoring and adaptive management program below that implementation and effectiveness monitoring reports, audit reports, and results of oversight by the Services should be made available to the public and interested agencies (see comments 30(j) and 31(E) below). We recommend that the Implementing Agreement (Appendix A) explicitly describe where and when these reports can be obtained. The Incidental Take Permit should be suspended or revoked if the monitoring program, audit reports, etc. are not made available to the public within 3 years from the date of Permit issuance.
24. The Implementing Agreement does not appear to include strong language regarding Permit or NFHCP compliance or enforcement. EPA recommends that the Implementing Agreement more clearly describe roles and responsibilities between the Services, Plum Creek and the independent auditors for inspections and consultations. We believe consequences and

remedies for Permit and NFHCP non-compliance should be established in the Implementing Agreement, and such remedies and consequences should be strong enough to deter violations. The process for monitoring and assuring compliance should be as clear and expeditious as possible.

25. We also believe the USFWS and NMFS needs to establish schedules for inspections and consultations, and milestones for its and other agencies involvement as the implementation phase moves forward. This is necessary to insure adequate oversight, and follow through with the commitments made by Plum Creek.
26. **We are concerned that the USFWS and NMFS may lack adequate resources to properly oversee implementation of this 30 year Permit and NFHCP covering 1.7 million acres in three States.** We are particularly concerned that the USFWS in Montana (where 88% of the Plum Creek land is located) lacks resources to effectively carry out this oversight responsibility. Other agencies are presently providing resources to the USFWS to allow the Service to carry out its ESA responsibilities in Montana (e.g., US Forest Service and Montana Dept. of Transportation provide resources to the USFWS in Montana). The resources that the Services will be able to provide to inspect, monitor and oversee Permit and NFHCP implementation on the 1.7 million acres of Plum Creek land over the 30 year Permit period should be described in the FEIS. Will these resources be adequate to provide needed inspections, evaluations, and oversight of the Permit and NFHCP?
27. The success of the NFHCP in terms of achieving biological goals, avoiding “take” of listed species, assuring species viability and sustainability, protecting and restoring water quality and aquatic habitat, depends to a great extent upon the effectiveness of the monitoring and adaptive management program. As described below in our comments on monitoring and adaptive management (see comments 30 and 31) we have questions and concerns regarding Plum Creek’s proposed monitoring/adaptive management program. We have concerns that the monitoring and adaptive management program lacks the necessary detail and specificity to assure that all effects from Plum Creek’s management activities will be identified and mitigated. It will be important that the monitoring and adaptive management program be improved and/or further explanations provided to assure that all effects of Plum Creek activities are identified and properly mitigated.

It is not clear in the draft Implementing Agreement (shown in Appendix A of the DEIS) just what will happen if Plum Creek’s NFHCP prescriptions do not allow attainment of biological goals, species viability and sustainability, and/or water quality and aquatic habitat protection and restoration. Adaptive management has not been fully realized as a success in most cases (Walters, C. 1997, “Challenges in adaptive management of riparian and coastal ecosystems,” Conservation Ecology [online] 1(2): 1 URL: <http://www.consecol.org/v11/iss2/art1>). As Walters points out, one of the biggest failures of the approach is a general lack of ambitious and

innovative commitment on the part of agencies and industry.

28. The document appears to provide an excellent forum for the formation of creative conservation partnerships, but it is not clear how this will be evaluated and measured.
29. It is stated on page 1-16 of the NFHCP that Plum Creek can request termination of the permit if it elects to do so. How are ESA requirements met if Plum Creek unilaterally requests termination of the permit? Can the Services unilaterally terminate the Permit if land management prescriptions are found to provide inadequate protection?

NFHCP Aquatic Monitoring and Adaptive Management:

30. The EPA believes that the water quality/aquatics monitoring and the adaptive management program is a crucial element in identifying and understanding the consequences of Plum Creek management actions, and identification of impacts is necessary for effective mitigation of impacts of management activities. Generally in reviewing EIS's for silvicultural activities on Federal land the EPA considers the collection of baseline water quality and aquatic habitat data at the project level to be important to provide a comparison with projected impacts as well as to identify actual project impacts. Project specific monitoring information best assures that the effects (i.e., physical, chemical and biological effects) of proposed silvicultural activities on water quality and the aquatic ecosystem will be determined.

Also, it is important that quantifiable, measurable resource protection goals be developed and that monitoring be focused at assessing attainment of such goals. It is through an iterative process of monitoring effects of land management, evaluating monitoring results relative to goals, and revising management appropriately, that resource protection goals are attained. Monitoring validates and documents BMP effectiveness in protecting water quality, beneficial uses, and State Water Quality Standards, and assists with TMDL development. Monitoring can also measure and document improvements in water quality and watershed recovery, which would be of value to guide future conservation efforts.

Plum Creek's proposed NFHCP monitoring and adaptive management program appears to rely to a great extent on monitoring demonstration watersheds in the four Core Adaptive Management Projects (CAMPs), rather than on project specific monitoring. These demonstration project areas will receive intensive monitoring and experimental treatment of different land uses to evaluate the effects of Plum Creek's activities.

CAMP 1 focuses on sediment delivery off roads. CAMP 2 focuses on woody debris, pool frequencies and undercut banks as measures of fish habitat diversity. CAMP 3 focuses on stream temperature and biological data. CAMP 4 focuses on channel attributes, riparian conditions, and biological community responses to grazing BMPs (NFHCP page 8-13). Two

additional demonstration projects are also proposed; an assessment of the effectiveness of riparian restoration on key migratory rivers; and the Gold Creek experimental brook trout suppression project. “Dispersed effectiveness monitoring” is proposed (NFHCP, page AM1-4) to sample conditions that may not be found in the demonstration watersheds. In addition “continuous improvement monitoring” and “implementation monitoring” are proposed.

While we appreciate the effort that went into the development of Plum Creek’s proposed monitoring and adaptive management program, and we think it is a good start, we have questions and concerns regarding the adequacy of the program. These questions and concerns are described below:

(a) “Effectiveness” monitoring as described in the NFHCP (page 8-3) is closer to what others would define as “validation” monitoring (Kershner, J. J. 1997, Monitoring and adaptive management, pages 116-134 in J. E. Williams, M. P. Dombeck, editors, Watershed restoration: principles and practices. American Fisheries Society, Bethesda, MD.). Validation monitoring is conducted to test the validity of basic assumptions that underpin effectiveness monitoring. Effectiveness monitoring is conducted to determine if management actions (whose implementation on the ground is verified determined through “implementation” monitoring) were effective in achieving management goals.

(b) We agree that the proposed CAMP and other demonstration projects will provide useful information, however, **we are concerned that it will be difficult for the conditions in all 5,000 miles of perennial and intermittent streams in the planning area (page 4-20) to be adequately represented by only four to six demonstration watersheds.** A critical assumption of the “effectiveness” monitoring program is that effects observed in CAMPs and other demonstration projects can be extrapolated to other project areas (i.e., non-demonstration watersheds). There is no real assurance in the plan that this assumption is valid. We are concerned that the demonstration project watersheds may not adequately represent the conditions and circumstances in the many non-demonstration watersheds where Plum Creek activities will take place over the 30 year life of the Permit.

It is stated that monitoring in the demonstration watersheds can be “confidently be extrapolated to that portion of the planning area that is geologically, geomorphically, and climatically similar to the demonstration watershed” (NFHCP Appendix AM 1, page 3). We ask how many watersheds are present in the 1.7 million acres of Plum Creek land in the planning area in which Plum Creek will carry out management activities during the 30 year period of the Permit? How do these watersheds compare (geologically, geomorphically, and climatically) to the 4 to 6 demonstration watersheds? What are the type, level or intensity of management activities in the demonstration watersheds vs. non-demonstration watersheds in the project area? How will monitoring in demonstration watersheds be used to allow adequate assessment of effects of activities occurring in non-demonstration watersheds if the type, level or intensity of activities

and/or watershed characteristics (e.g., geology, soils, slopes, channel types, climatic regimes, vegetation and riparian conditions, etc.) are significantly different in the demonstration watersheds vs. the watersheds where Plum Creek management activities are conducted?

Extrapolation from CAMPs to the individual project areas is a problem. Significant degradation of habitat and fish populations may occur outside of CAMPs, yet not be detected. Detection of environmental impacts using habitat or population surveys is already difficult enough without the problem of extrapolation. **The question of extrapolation from CAMPs to the many individual Plum Creek project areas needs to be explicitly addressed.**

Further discussion should be provided to validate or better explain how monitoring in the demonstration watersheds will be extrapolated to assess all effects of Plum Creek activities, particularly from activities in non-demonstration watersheds that are not geologically, geomorphically or climatically similar to demonstration watersheds, or where the type, level or intensity of activities is different.

(c) While the four CAMPs are described in NFHCP Appendix AM-1, the specific locations (or likely locations) of the monitoring stations relative to the locations of Plum Creek's likely activities over the 30 year Permit period, and the specific parameters to be monitored, and frequency of monitoring for the CAMP projects are not clearly disclosed. Without more understanding of these specific details of the monitoring program, the adequacy of the monitoring and adaptive management program cannot be assured.

(d) "Dispersed effectiveness monitoring" and "continuous improvement monitoring" appear to be proposed to monitor conditions outside demonstration watersheds. However, little specific or detailed information is provided regarding this monitoring. The monitoring proposed in watersheds where individual Plum Creek activities will take place to measure impacts of specific individual Plum Creek projects should be more fully and clearly disclosed (e.g., locations of monitoring stations relative to location of management activities, parameters to be monitored, frequency of monitoring, etc.). **Will monitoring be available to measure and detect all aquatic and hydrologic effects of management actions?**

(e) In regard to this dispersed effectiveness monitoring, it is stated (NFHCP, page AM1-4) that monitoring results "may suggest that NFHCP biological goals are not being met in a subset of the project area", and that this will be used to adapt effectiveness monitoring through time. As noted above, the specific details of proposed dispersed effectiveness monitoring are unclear. How will monitoring results, particularly dispersed effectiveness monitoring results, be used to adapt management over time? How will monitoring activities be used to validate assumptions that Plum Creeks activities will protect water quality and water resource integrity and allow recovery of listed fish species in all watersheds?

(f) Table NFHCP 8-1B (NFHCP page 8-17 to 8-22) identifies the proposed adaptive

management process, including habitat objectives, management actions, performance metrics, triggers and management responses. The presentation and disclosure of information regarding the adaptive management program in this Table is good. Review of the Table, however, leaves questions and concerns regarding the adequacy of the adaptive management program for complete assessment of water quality, aquatic and hydrologic effects, particularly cumulative effects, of management actions. The performance measures and triggers do not appear comprehensive enough to fully assess all effects to aquatic biota, nutrients, stream sedimentation, water yield or channel condition.

-How will effects of increased water yield from timber harvest be assessed (i.e., effects on hydrology, runoff patterns, peak flows, channel stability, etc.,)?

- Are percent fine measurements or stream substrate coring or other means on measuring stream sedimentation proposed?

- Are channel cross-sections or channel stability measurements proposed to monitor effects on channel morphology?

- If so, where are channel measurements proposed in relation to the location of management activities?

- It is not clear how effects of management activities on nutrient levels and nutrient transport will be assessed (i.e., nutrient transport related to soil and vegetation disturbing activities, fertilizer use, etc.,)?

- While it is stated that fish species diversity, age-class distribution, and population density will be measured (NFHCP, page AM1-2) it is not clear how frequently or where these fish measurements will be made. It is not clear if any monitoring of aquatic biota other than fish is proposed (e.g., periphyton, macroinvertebrates).

- How will aquatic effects from chemical usage be monitored (i.e., pesticides, herbicides, fertilizers, fire retardants, fuels, lubricants, etc.,)?

- In regard to the temperature trigger it is stated (NFHCP, page8-17) that the temperature trigger is “a statistically significant change in temperature for a given stream gradient/width class relative to pretreatment conditions.” How is this determined? How does this trigger relate to “ecologically significant” temperature conditions? The trigger and its use are unclear. We are concerned that elevated stream temperatures may still occur without adequate response. We recommend that ecologically based temperature requirements or thresholds of the fish species be identified, and that triggers be directed at achieving the ecological thresholds.

The use of temperature metric Maximum Weekly Average Temperature (MWAT) does not adequately represent the impact of maximum temperatures on the aquatic community. Temperature metrics such as, Maximum Daily Maximum Temperature (MDMT) or Maximum Weekly Maximum Temperature (MWMT) have been identified in the literature, as being more biologically relevant in identifying the actual thermal load and stress on the fish. The literature in support of this is cited in a recent USEPA-Region 10 peer review done on the State of Idaho's proposal to replace the federally promulgated temperature criteria of 10°C for bull trout spawning and juvenile rearing waters in the State of Idaho (available upon request). The State of Idaho's proposal was a temperature criteria of 12 °C Maximum Daily Average Temperature (MDAT), which equates to 13.3 °C MWMT, and could result in a MWMT of 16 °C.

Use of mean weekly average temperature dates back almost 30 years to the National Academy of Science review of water quality standards for EPA. We suggest using more up-to-date metrics that are more likely to be linked to biological responses. Use of several criteria, including a daily maximum temperature, weekly maxima, and time of exposure to critical temperatures would seem more realistic, in the biological sense. Revision of regional temperature criteria is currently being supported by EPA, and better advice on appropriate criteria should be available within two years.

The before/after design to detect effects of management activities on temperatures is not the most rigorous approach. With only one year of "before" data, you may have relatively low statistical power for comparisons with "after" data. It would be difficult to statistically reject the hypothesis of no impact, when in fact a biologically relevant (but not statistically significant) impact may have occurred. One remedy would be increased replication of experimental units to overcome the shortage of "before impact" data.

Some specific clarification regarding biologically significant effects, sample size, and statistical "significance" (Johnson, D. H. 1999, The insignificance of significance testing. *Journal of Wildlife Management* 63:763-772) should be included in the Plan. Sometimes a biologically significant effect is realized *without* statistical significance. Levels of biological significance need to be spelled out in addition to statistical significance.

- The sediment reduction trigger and its use are also unclear. It is stated that this trigger "will be observed if the pro-rated sediment reduction calculated across the Project Area is 30% or less, which is statistically less (at approximately 1 standard deviation) than the average weighted reduction of 49% calculated in the effects analysis" (NFHCP, page 8-23). This language is confusing, and we are concerned that it may still allow adverse sediment effects to occur. We recommend in-stream sediment measures for triggers directed at achieving clean stream substrate adequately protective of fish spawning and rearing needs.

- It may be appropriate for the Services to assemble an independent science review panel made up of agency, company, and accredited academic representatives to review the monitoring and adaptive management program, particularly relating to ecological thresholds and triggers. We believe such a panel would improve the adaptive management program and lend credibility to the program. Such independent scientific oversight of the adaptive management program may better assure that Plum Creek management actions remedy problems in a manner that truly provides protection to fish.

(g) It is also not clear where “triggers” will be monitored or how or when they will be used to change management. As we understood it, triggers to initiate the adaptive management can only be pulled through effects detected in CAMPs, or by lack of implementation. When a trigger is pulled, there are a lot of filters the adaptive management process must pass through before something on the ground is done to remedy the situation (see NFHCP page 8-8). **This delay could take over 7 years** (NFHCP page 8-16). A lot of adverse impacts to fish could occur while deliberations take place. While it is important to be rigorous in making decisions, the cost of inaction should also be carefully considered. There may be some situations that have relatively low cost of action, but immediate benefit to a pressing threat (e.g. removal of recently invading non-natives). In some cases, if changes in management practices are not implemented immediately, the long term costs can increase dramatically (“a stitch in time...”). This works both ways for the resource and business goals. In some situations, the cost of inaction is lower because the immediate threat is lower. Some clarification of the cost of delayed vs. immediate action is needed.

The current adaptive management cycle is “reactive” in the sense that nothing is done to correct a potential problem until a lengthy evaluation is completed. A perhaps more proactive alternative would be to temporarily halt timber harvest, grazing, etc. (adopt a very protective and precautionary strategy) until a reasonable alternative is identified. This avoids further and potentially irreversible degradation while the adaptive cycle is implemented. This is particularly relevant if time lags in responses are important. Again this may be a good business decision as well (e.g. take the short-term precautionary measure to avoid a more larger and uncertain long-term cost).

(h) The extent of and details regarding in-stream (or in-channel) monitoring of water quality/aquatic habitat parameters vs. upland (hillslope or road) sediment transport monitoring vs. riparian condition monitoring proposed by Plum Creek are not entirely clear. An integrated in-stream, upland, and riparian monitoring program is recommended to fully assess and mitigate effects of forest practices upon aquatic ecosystems. It is not entirely clear how all these components are integrated in Plum Creek’s monitoring program. It is also not clear how all the monitoring results will be compiled, analyzed and interpreted for reporting, and for revising or adapting management if monitoring results evidence water quality, aquatic habitat or fisheries degradation.

(i) Another issue not directly addressed in the NFHCP (but perhaps in the minds of the authors) is the issue of lagged responses of habitat to changes in land management and lagged responses of fish populations. For example, populations of relatively long-lived fishes, such as bull trout, may not respond immediately to changes in habitat. Consider the effect of changing juvenile survival. We may observe large numbers of adults and juveniles (those alive before they die) for sometime until it becomes clear that juvenile survival is an issue. By the time the effect is detected, correction may be more complicated. Perhaps an explicit treatment of time lags should be included as a priority goal for validation monitoring.

(j) It is implied on NFHCP page AM-1-4 that monitoring and research information will be presented to the public. It is very important that verification be provided that Plum Creek implements their NFHCP and meets their commitments, and that interested agencies and the public have access to this information. Access by interested agencies and the public to monitoring reports is critical to the success of the program.

We note that staff in EPA's Region 10 Office in Seattle have made requests to the USFWS and NMFS to obtain monitoring information regarding the Plum Creek's earlier HCP for their patchwork land ownerships along the Interstate 90 corridor in the State of Washington. This information, however, has not been provided to EPA, and EPA has not been able to verify that Plum Creek implemented and reported on the results of their HCP monitoring commitments. Without access to monitoring information, Plum Creek's NFHCP will be highly dubious as a legitimate mechanism to ensure species recovery. There must be an open and transparent forum to examine monitoring information and a fair and impartial system to guide its interpretation and application to making future management adjustments. What are the mechanisms and time lines by which monitoring and adaptive management information will be provided to interested agencies and the public?

31. While we realize this EIS is for an Incidental Take Permit and HCP on private land rather than silvicultural activities on Federal land, it is clear from the questions and comments above that EPA is concerned that the conceptual monitoring and adaptive management plan provided in the DEIS does not contain enough detail or specific information to assure that proposed monitoring will identify and measure all aquatic and hydrologic effects, particularly cumulative effects, of Plum Creek land management activities likely to take place during the 30 year period of the Permit.

We believe that more detailed and specific information for the CAMPs and other demonstration projects, and the dispersed effectiveness monitoring and continuous improvement monitoring should be provided to assure that all aquatic/hydrologic effects of Plum Creek land management activities are properly identified and documented. Without this information we do not believe the EIS will include adequate information to fully assess and mitigate effects of the management actions. We believe additional information should be provided to address the

questions, comments and concerns identified in comment 30 above. This should include:

(A) Identification or discussion of the locations (or likely locations) of the monitoring stations and the specific parameters to be monitored and frequency of monitoring for the CAMP and other demonstration projects. Identification of demonstration watersheds on a map also showing Plum Creek land ownerships where management activities are likely to occur during the 30 year Permit period is recommended. Discussion of the type, level or intensity of activities and/or watershed characteristics (e.g., geology, soils, slopes, channel types, climatic regimes, vegetation and riparian conditions, etc.,) in the demonstration watersheds vs. other watersheds should be provided as much as possible to better validate the concept of extrapolating monitoring results from demonstration watersheds to assess effects from management activities in non-demonstration watersheds.

(B) Similarly, the dispersed effectiveness monitoring and continuous improvement monitoring proposed to assess effects outside of demonstration watersheds should be more fully and clearly described. The locations (or likely locations) of the monitoring stations and the specific parameters to be monitored and frequency of monitoring for these dispersed locations should be disclosed. Disclosure of monitoring locations relative to the location of Plum Creek management activities should be provided (maps would be helpful). Will monitoring be available to measure and detect all aquatic and hydrologic effects of management activities? We suggest that detailed and specific water monitoring objectives, parameters, frequencies, and locations be included in the adaptive management plan. This is necessary to describe where project specific monitoring will be carried out to evaluate activities that cannot be assessed by the demonstration projects.

(C) We recommend that habitat objectives that address nutrient transport and aquatic biota (periphyton and macroinvertebrates), stream sedimentation, and hydrologic-water yield effects from management actions be added to or clarified in the adaptive management program. Channel cross sections; pool habitat; channel stability; percent fines in spawning gravel; substrate coring; riffle stability index, and rapid bioassessments (e.g., periphyton, macroinvertebrates) are suggested for consideration as additional monitoring metrics. Monitoring of the aquatic biological community is desirable since the aquatic community integrates the effects of pollutant stressors over time and, thus, provides a more holistic measure of impacts than grab samples.

(D) We would like to emphasize the importance of explicitly defining the components of an integrated (in channel, riparian, and upland) monitoring program for the aquatic components.

(E) The mechanism to assemble, compile, analyze, and interpret aquatic and riparian monitoring information, and to allow access to this information by interested agency staff and the public should also be described. Timelines for implementation and review of monitoring output should

be defined, and perhaps periodic open-forum presentations could be planned to allow both the applicant and the Services to showcase monitoring results and to better inform a public discussion of adaptive management.

We recommend that the Implementation Agreement state that the implementation and effectiveness monitoring reports, audit reports, and results of oversight by the Services be made available to the public and interested agencies. It should be made explicit in the Implementation Agreement where and when these reports can be obtained. The Incidental Take Permit should be suspended or revoked if the monitoring program, audit reports, etc. are not made available to the public within 3 years from the date of Permit issuance.

(F) As noted in comment number 12 above, road density should be another parameter to monitor and assess over time. Information about road construction and maintenance effects on sediment delivery to streams, their location with respect to water resources and unstable slopes, types of mitigation measures to be used, and mitigation measure effectiveness should also be monitored and reported.

(H) We often recommend use of the following reference materials in designing and disclosing a monitoring program for assessing aquatic effects of silvicultural activities:

"Monitoring Guidelines to Evaluate Effects of Forestry Activities on Streams in the Pacific Northwest and Alaska", Lee H. McDonald, Alan W. Smart, and Robert C. Wissmar; May 1991; EPA/910/9-91-001.

"Rapid Bioassessment Protocols for Use in Streams and Rivers", James A. Plafkin; May 1989; EPA/444/4-89-001.

Montana Forestry BMP's; Extension Publications; July 1991, Montana State University; EB0096.

"Montana Stream Management Guide; for Landowners, Managers, and Stream Users", Montana Dept. Of Environmental Quality; December 1995.

We believe an improved and more detailed monitoring and adaptive management program will better assure EPA and the States that the NFHCP will minimize impacts to water quality and aquatic habitat and be fully protective of State water quality standards. The monitoring programs associated with this and future HCPs are needed to assure that of water quality, aquatic habitat, and fisheries concerns are resolved. A comprehensive monitoring program will assist in the integration of NFHCP components into TMDLs on water quality limited water bodies in the planning area. Discussions on the integration of HCPs and TMDLs will continue at our respective agencies, and comprehensive monitoring information will facilitate future

efforts to integrate TMDLs and HCPs.

Permit Time Period:

32. Since the EPA has concerns regarding the adequacy of some of the commitments to address aquatic degradation (riparian prescriptions, lack of road density commitment, etc.), and concerns about the adequacy of the monitoring and adaptive management program and implementation reporting and oversight, we believe it would be prudent for the Services to consider a duration of time shorter than 30 years for the Incidental Take Permit. We recommend that the Services consider issuing a Permit for a shorter period of 10 to 20 years, perhaps with an option to extend the Permit to 30 years if monitoring reports provide adequate documentation that prescriptions are successful in improving water quality and aquatic habitat adequate to restore salmonid fisheries.

Clean Water Act - Water Quality Considerations:

33. The EIS should more clearly identify the water bodies (i.e., rivers, streams, lakes) in the planning area which may be impacted by Plum Creek activities. It is stated that there are approximately 5,000 miles of perennial and intermittent streams and 1,400 miles of fish bearing streams within the project area (page 4-20). However, only major rivers appear to be identified in the DEIS, although Table 4.6-10 (page 4-145 to 4-149) identifies bull trout sub-population basins in the planning area. It is not clear if the water bodies identified in Table 4.6-10 comprise all the approximately 5,000 miles of perennial and intermittent streams in the planning area. In any case, water bodies potentially affected by Plum Creek management activities should be identified. Identification of water bodies on maps that also show Plum Creek land ownerships is recommended, since this will help to convey their relationship with project activities.

The EIS should also include at least a summary description of the existing physical, chemical, and biological conditions of the water bodies in the planning area. Where water quality and aquatic habitat information for individual water bodies exists it should be presented. This would include summary information from stream or water quality inventories such as; baseline water quality data- temperature, sediment, turbidity, nutrients; aquatic communities; channel morphological conditions; the condition and productivity of aquatic habitat; riparian conditions; the presence of toxic substances; the condition or status of fisheries in the planning area; the existence of any known point or non-point pollution sources or other problems; and the potential for water quality to affect resources and species of concern. The EIS should reveal what data is available and the condition (reliability, gaps in data, etc.) of that information.

This information is necessary to allow the EIS reader to better understand the status of existing water quality and aquatic habitat in the planning area, and help the EIS reader evaluate whether

the proposed NFHCP will adequately address water quality and aquatic habitat problems to avoid incidental take and allow compliance with water quality standards.

34. As stated in the DEIS (page 1-23), the Clean Water Act (CWA) is the principle federal legislation designed to protect water quality. Section 303 of the CWA includes provisions for establishing Water Quality Standards and Total Maximum Daily Loads (TMDLs). Existing Water Quality Standards applicable to the affected water bodies in the planning area should be presented to allow evaluation of whether beneficial uses will be protected and Water Quality Standards met. The expectation of the NFHCP is that it should protect and fully support designated uses and meet Water Quality Standards in all three States. The FEIS should provide a quantitative basis to judge whether and how this will be achieved with respect to physical, chemical, and biological parameters, such as organic, microbial, and nutrient loading, temperature, turbidity, and sediment accumulation, aquatic biota, and aquatic habitat.
35. It is stated (page 4-27) that most water bodies in the planning area have water quality that meets State Water Quality Standards, but it is also stated that **about 8 to 12% of the stream miles are water quality limited**, either by temperature (3 to 6%), nutrients (0 to 4%), sediment (9 to 10 %), or flow impairment 3 to 6%). We recommend that 303(d) listed streams in the planning area be identified, with information on the magnitude and sources of impairment. Ideally the EIS should identify the specific parameters resulting in a 303(d) listing and how Plum Creek's activities or proposed NFHCP and other alternatives might affect these parameters (e.g., temperature, sediment, phosphorus, aquatic habitat). An explanation of how the NFHCP would address these impaired water bodies so that they would meet State Water Quality Standards, fully protect and support designated uses, and achieve antidegradation of water quality (EPA Antidegradation Policy found in 40 CFR 131.12) should also be included.

Each 303(d) listed water needs preparation of a TMDL. The TMDL process identifies the maximum load of a pollutant (e.g., sediment, nutrient, metal) a water body is able to assimilate and fully support its designated uses (aquatic life or fisheries uses are often one of the most sensitive uses); allocates portions of the maximum load to all sources; identifies the necessary controls that may be implemented voluntarily or through regulatory means; and describes a monitoring plan and associated corrective feedback loop to insure that uses are fully supported. We recommend that the status of TMDL development be presented for 303(d) listed waters within the planning area (for listed waters in all three States).

The EPA believes that Habitat Conservation Plans (HCPs) prepared in response to ESA species survival and recovery needs should be consistent with present and future TMDLs prepared to satisfy CWA requirements. Identification of 303(d) listed streams and TMDL status in the EIS will facilitate assessment of NFHCP-TMDL consistency, and will facilitate efforts to better integrate and coordinate TMDL requirements with the NFHCP. The NFHCP has many watershed restoration elements that may be incorporated into TMDLs at a

later date if they prove to be effective.

We also recommend that a caveat be included in the NFHCP that watershed scale TMDLs will need to be completed at a future date by the States to cover all land ownerships in watersheds of 303(d) listed waters. A “reopener” statement may also be needed and/or adaptive management process established to allow for NFHCP habitat protections to be reassessed when the larger watershed scale TMDLs are completed at a later date. We urge the lead agency and Plum Creek to coordinate the NFHCP closely with EPA and the State water quality agencies in meeting Clean Water Act mandates.

Tribal Trust Resources:

36. It is stated (page 2-29) that nearly 1.3 million acres of Tribal lands occur within the planning area. We are pleased that it is stated in Chapter 6 of the DEIS that the Services have consulted with 14 Native American Tribes. As you know the U.S. has a unique relationship with Tribal governments which requires that Federal agencies assess and disclose the impacts of their actions on Tribal Trust resources. Trust resources are located both within the boundaries of reservations and outside the reservation in Usual and Accustomed fishing and hunting areas. The environmental document should fully disclose the potential environmental impacts, both negative and positive, on Tribal Trust resources. We ask if all impacts upon Tribal Trust resources are adequately disclosed in the DEIS? Have the Tribes provided comments or expressed any concerns about the NFHCP and proposed Permit? Does the NFHCP and Permit adequately address Tribal concerns?